

ALO--WWID-WIPP-1999-0008

Final Report

Occurrence Report

Waste Isolation Pilot Plant

(Name of Facility)

Nuclear Waste Operations/Disposal

(Facility Function)

Carlsbad Area Office

Westinghouse Waste Isolation Div.

(Laboratory, Site, or Organization)

**Name:** xxxxxxxx

**Title:** SURFACE OPERATIONS MANAGEMENT ASST.

**Telephone No.:** (505) xxxxxxxx

(Facility Manager/Designee)

**Name:** xxxxxxxx

**Title:** SURFACE OPERATIONS MANAGEMENT ASST.

**Telephone No.:** (505) xxxxxxxx

(Originator/Transmitter)

**Name:**

**Date:**

(Authorized Classifier (AC))

1. Occurrence Report Number: ALO--WWID-WIPP-1999-0008

HYDROCHLORIC ACID SPILL

2. Report Type and Date: Final

	Date	Time
Notification:	12/09/1999	09:32 (MTZ)
Initial Update:	12/14/1999	08:58 (MTZ)
Latest Update:	01/28/2000	10:02 (MTZ)
Final:	01/28/2000	15:10 (MTZ)

3. Occurrence Category: Off-Normal

4. Number of Occurrences: 1

Original OR:

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**5. Division or Project:** WIPP**6. Secretarial Office:** EM - Environmental Management**7. System, Bldg., or Equipment:** HCL acid container.**8. UCNI?:** No**9. Plant Area:** General Facility**10. Date and Time Discovered:** 12/08/1999 14:30 (MTZ)**11. Date and Time Categorized:** 12/08/1999 16:00 (MTZ)**12. DOE Notification:****13. Other Notifications:**

Date	Time	Person Notified	Organization
12/08/1999	14:35 (MTZ)	Facility Representative	DOE-CAO

**14. Subject or Title of Occurrence:**

HYDROCHLORIC ACID SPILL

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**15. Nature of Occurrence:**

03) Personnel Safety  
A. Occupational Illness/Injuries

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**16. Description of Occurrence:**

At approximately 1430 on December 8, 1999, an employee was handling a 2.5 liter bottle of 37% HCL solution. While placing the bottle on a transportation cart, it was dropped and broken. The resultant spill was entirely contained within the catch basin which is an integral part of the cart. Nine employees in or near the vicinity of the spill were exposed to the fumes from the spilled acid. No one suffered from direct contact with the acid.

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**17. Operating Conditions of Facility at Time of Occurrence:**

Does not apply.

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**18. Activity Category:**

03 - Normal Operations

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**19. Immediate Actions Taken and Results:**

The general area was evacuated. The appropriate incident response procedures were invoked. The response team neutralized the acid and packaged the materials for disposal as site-generated hazardous waste. By approximately 1800, the area had been cleared, ventilated, and incident response terminated.

All nine personnel who had been exposed to the fumes received initial evaluation by the site medical facility nurses. The maximally exposed individual complained of mild respiratory tract irritation and watering eyes. As a precautionary measure, all nine personnel were then transported to the hospital in town for further evaluation. No one was admitted for in-patient care.

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**20. Direct Cause:**

- 3) Personnel Error
  - A. Inattention to Detail

**21. Contributing Cause(s):**

- 3) Personnel Error
  - C. Communication Problem
- 4) Design Problem
  - A. Inadequate Work Environment

**22. Root Cause:**

- 3) Personnel Error
    - B. Procedure Not Used or Used Incorrectly
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**23. Description of Cause:**

The root cause of the event was a failure by the employee to follow standard laboratory practices and procedures. The employee used an approved transport container for three bottles of acid, and then attempted to place three more bottles in a cardboard box which had been placed on the cart. One of the latter three bottles slipped from the employee's hand and struck a bottle already in the cardboard box. The bottle broke and spilled acid into the catchment basin which is an integral part of the transportation cart.

The direct cause relates to the employee's failure to apply proper attention to the details of the task.

The consequences of the spill were amplified by two significant contributing factors: 1)The employee attempted to clean up the spill individually and did not immediately inform the Central Monitoring Room of the event as required by facility procedures. 2)The involved hazardous materials locker was located in

a high-traffic breezeway between two buildings. Several doors lead into the breezeway from work spaces, contributing to the exposure of eight additional employees to the acid fumes.

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**24. Evaluation (by Facility Manager/Designee):**

Initial failure by the employee to promptly notify the Central Monitoring Room (CMR) of a hazardous material spill delayed the deployment of response teams. Another employee incidentally entered the area and determined there was a problem - acid fumes were heavy in the area, the involved employee's effort to soak up the acid with "spill pillows" was resulting in high exposure for that employee, and no one had been notified. This second employee ensured the CMR was called, and as other passers-by entered the affected area, directed them to block access doors and verbally inform other employees in the immediate area to evacuate. From the time the CMR was notified, follow-up response to the event was appropriate and in accordance with established procedures.

Further medical evaluation of the nine involved individuals was conducted by the contract physician on 12-13-1999. This evaluation resulted in one lost work day for one individual. That individual was determined to have eye irritation which, in the opinion of the physician, warranted a day off work. The individual returned to work after one lost day.

The local newspaper, Carlsbad Current Argus, published a small article about the event in its December 9th edition. The article is factual, neutral, and should not result in embarrassment or discredit to WIPP.

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**25. Is Further Evaluation Required?: No**

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**26. Corrective Actions**

(\* = Date added/revised since final report was approved.)

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|----|--|---|-------------------------------------|
| 1. | Evaluate the training program for laboratory workers to determine if it adequately addresses the process and precautions related to handling and transporting hazardous material.<br>Action completed with the determination that the program is adequate. | <b>Target Completion Date:</b> 01/10/2000 | <b>Completion Date:</b> 01/10/2000  |
| 2. | The involved worker will be retrained in accordance with the defined laboratory training program.  | <b>Target Completion Date:</b> 03/15/2000 | <b>Completion Date:</b>             |
| 3. | Have an independent laboratory organization perform an evaluation of all WIPP laboratory processes and procedures relative to hazardous materials.   | <b>Target Completion Date:</b> 03/01/2000 | <b>*Completion Date:</b> 02/04/2000 |
| 4. | Take administrative action to ensure future procurement orders for hazardous materials specify containers which are coated with plastic or are similarly protected to minimize breakage.   | <b>Target Completion Date:</b> 12/15/1999 | <b>Completion Date:</b> 12/09/1999  |
| 5. | Purchase a transportation cart designed to more effectively contain and cushion hazardous materials while handling them.   | <b>Target Completion Date:</b> 01/10/2000 | <b>Completion Date:</b> 01/05/2000  |
| 6. | Relocate the hazardous materials storage lockers to a more suitable, low traffic area of the facility.   | <b>Target Completion Date:</b> 01/14/2000 | <b>Completion Date:</b> 01/14/2000  |
| 7. | Update the facility chemical hygiene plan.   | <b>Target Completion Date:</b> 03/01/2000 | <b>Completion Date:</b>             |

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### 27. Impact on Environment, Safety and Health:

This event resulted in one lost work day when the contract physician determined eye irritation in one individual warranted a day off work.

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### 28. Programmatic Impact:

None

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### 29. Impact on Codes and Standards:

None

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**30. Lessons Learned:**

Evaluation of traffic patterns in relation to hazardous materials storage locations should receive higher priority than has been the practice. Release of such materials in a high-traffic area can result in exposures to incidental passers-by which would be otherwise avoided.

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**31. Similar Occurrence Report Numbers:**

1. None

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**32. User-defined Field #1:****33. User-defined Field #2:**

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**34. DOE Facility Representative Input:**

The FR agrees with the direct cause cited. Based upon the information available and facts presented in the root cause analysis of the hydrochloric acid spill, the corrective actions planned and those implemented by the M&OC are reasonable and should preclude recurrence of similar events. M&OC personnel initial, immediate responses to this incident was exceptional.

Entered by: xxxxxxxx

Date: 01/28/2000

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**35. DOE Program Manager Input:**

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**36. Approvals:**

**Approved by:** xxxxxxxx, Facility Manager/Designee

**Date:** 01/28/2000

**Telephone No.:** (505) xxxxxxxx

**Approved by:** xxxxxxxx, Facility Representative/Designee

**Date:** 01/28/2000

**Telephone No.:** (505) xxxxxxxx

**Approved by:** Approval delegated to FR

**Date:** 01/28/2000

**Telephone No.:**

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